

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 16 MAY 2006

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| Applicant's or agent's file reference FP2060 | FOR FURTHER ACTION See Form PCT/IPEA/416 | |
| International application No. PCT/SG2004/000021 | International filing date (<i>day/month/year</i>) 20 January 2004 | Priority date (<i>day/month/year</i>) 20 January 2004 |
| International Patent Classification (IPC) or national classification and IPC Int. Cl. <i>H04J 13/00</i> (2006.01) <i>H04J 13/02</i> (2006.01) <i>H04J 13/04</i> (2006.01) | | |
| Applicant AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH et al | | |

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
 - ☐ (*sent to the applicant and to the International Bureau*) a total of sheets, as follows:
 - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - ☐ (*sent to the International Bureau only*) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

- This report contains indications relating to the following items:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Box No. I | Basis of the report |
| <input type="checkbox"/> Box No. II | Priority |
| <input type="checkbox"/> Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> Box No. VI | Certain documents cited |
| <input type="checkbox"/> Box No. VII | Certain defects in the international application |
| <input checked="" type="checkbox"/> Box No. VIII | Certain observations on the international application |

| | |
|---|---|
| Date of submission of the demand 14 November 2005 | Date of completion of this report 04 May 2006 |
| Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929 | Authorized Officer ROBERT BARTRAM Telephone No. (02) 6283 2215 |

Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☒ The international application in the language in which it was filed
- ☐ A translation of the international application into _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3(a) and 23.1 (b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☒ the international application as originally filed/furnished
- ☐ the description:
- | | |
|--------|--|
| pages | as originally filed/furnished |
| pages* | received by this Authority on _____ with the letter of |
| pages* | received by this Authority on _____ with the letter of |
- ☐ the claims:
- | | |
|--------|---|
| pages | as originally filed/furnished |
| pages* | as amended (together with any statement) under Article 19 |
| pages* | received by this Authority on _____ with the letter of |
| pages* | received by this Authority on _____ with the letter of |
- ☐ the drawings:
- | | |
|--------|--|
| pages | as originally filed/furnished |
| pages* | received by this Authority on _____ with the letter of |
| pages* | received by this Authority on _____ with the letter of |
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to the sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to the sequence listing (*specify*):

* If item 4 applies, some or all of those sheets may be marked "superseded."

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

| | | |
|-------------------------------|--|-----|
| Novelty (N) | Claims 2 – 26, 28 – 30, 32 – 35, 37 – 54 | YES |
| | Claims 1, 27, 31, 36 | NO |
| Inventive step (IS) | Claims | YES |
| | Claims 1 – 54 | NO |
| Industrial applicability (IA) | Claims 1 – 54 | YES |
| | Claims | NO |

2. Citations and explanations (Rule 70.7)New Citations

1. US 2003 0165131 A1 (LIANG et al.) 4 September 2003 (New Citation)

2. Shengli Zhou et. al, "Chip Interleaved block spread CDMA versus DS-CDMA for cellular downlink: a comparative study", Vol. 3 Issue 1, IEEE Transactions on Wireless Communications, posted online 14 January 2004, pp 176 – 190 (New Citation)

Citations in International Search Report

3. US 2002 0126741 A1 (BAUM et al.) 12 September 2002

4. K. YANG et al, "Multistage Interference Cancellation with Frequency Domain Equalization for Uplink Transmission of Single Carrier Cyclic Prefix Assisted CDMA System", Proceedings of the IEEE Wireless Communications and Networking Conference, March 2002, pp 585 – 590

5. R. MORRISON et. al., "On the use of Cyclic Extension in OFDM" Proceedings of the 54th IEEE Vehicular Technology Conference, VTC 2001 Fall, Vol. 2, pp 843 – 847, 2001

Novelty (N) claims 1, 27, 31, 36

Citation 1 explicitly discloses

- Receiver (for example see abstract, figure 7, paragraphs [0116] – [0118], [0123])
- Filter (for example see figure 7, paragraph [0118])
- sequence extension remover (for example see figure 7, paragraphs [0116] – [0118])
- despreader (for example see figure 7, paragraphs [0116], [0123])
- frequency domain equalizer (for example see figures 7 and 9, paragraphs [0116], [0144])
- spreader (for example see Figures 1 and 5B, paragraph [0072])
- sequence extender (for example see Figures 1 and 5B, paragraph [0072])
- pulse shaper (for example see Figures 1 and 5B, paragraph [0072])

Furthermore, this citation discloses the methods as claimed in 27, 31, and 36 in the aforementioned citation. Therefore, the independent claims are not novel in light of this citation. It should also be noted that the feature of the despreader defining the symbol rate being less than the chip rate, is unavoidable with the existence of the sequence extension remover. Additionally, the feature of the ratio of the spread rate to the symbol rate is a known analysis of how much advantage is provided from the presence of the sequence extension remover, and thus the amount of efficiency that results.

Therefore the subject matter of these claims is not new and does not meet the requirements of Article 33(2) PCT with regard to novelty.

(See Supplemental Sheet)

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

Inventive Step (IS) Claims 1 – 54

Claims 1, 27, 31, 36 as above.

Claims 2 – 26, 28 – 30, 32 – 35, 37 – 54 lack inventive step when citations 2 – 5 are combined with Citation 1. Furthermore, when citations 2 – 5 are combined with common general knowledge claims 2 – 26, 28 – 30, 32 – 35, 37 – 54 also lack inventive step since claims 2 – 7, 12, 17 – 26, 29, 30, 32 – 34, 37, 38, 41, 42, 52 relate to parameters or structures that are merely matters of design choice when the general technical knowledge about the state of the art is used and claims 8 – 11, 13 – 16, 28, 35, 39, 40, 43 – 51 relate only to feature that are typical in devices of this type. Therefore, claims 2 – 26, 28 – 30, 32 – 35, 37 – 54 do not meet the criteria set out in PCT Article 33(3).

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claims 27 and 31 lack descriptive support because they do not define the removal of a predetermined number of chips from at least one predetermined position and therefore reducing the symbol rate of the received signal, in order to increase the efficiency by reducing the workload and power consumption of the transceiver system, is clearly defined on page 3 line 28 – page 4 line 2, page 4 lines 11 – 13 and 20 – 23, page 5 lines 1 – 15, and page 7 lines 17 – 19 and this feature is considered to affect the working of the invention.